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A HOME-MADE THRESHER FOR BLACK LOCUST SEED PODS

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A convenient, inexpensive method is often needed to thresh seed from collections of black locust pods in quantities too small to justify the use of a grain thresher. Such a method is also useful to determine accurately the yield of seed of given trees or collections of pods, in experimentation. Losses of seed from breakage and from incomplete threshing have occurred in grain threshing machines, and, consequently, inaccurate data on yield of seed have been obtained from such machines. Furthermore, flailing of pods by hand is a slow, costly process.

The Central States Forest Experiment Station has developed a mechanical thresher which has facilitated greatly the handling of black locust seed pod collections and has given more complete threshing of seed. Much of the labor has been eliminated and the working time has been reduced to a fraction of that required by hand flailing methods. In the construction of this thresher, lumber and other materials on hand were utilized to reduce costs, as numerous changes were made during the process of development.

The black locust pod thresher consists essentially of a cylindrical drum (A in figure), which revolves in and rubs against the closed end of a U-shaped loop (B) of 1/4" mesh wire cloth. Tension on this loop is maintained by elastic bands (C). The open ends of the wire loop are fastened to the feeding end of the machine in such manner that an open space is provided through which the pods may be fed downward and against the drum revolving in the closed end of the wire loop. The abrasion of the drum against the wire cloth is increased by a series of fourteen cleats fitted longitudinally around its circumference at intervals of about four inches. The revolving drum is driven by a 1/4 H. P. electric motor (D), and is geared by pulleys to rotate at about 100 R.P.M. The action of the cleats, scraping the pods against and through the wire loop, reduces most of the material to a matrix which will pass through a 1/4" screen. Unthreshed pods work out at the sides of the loop. The matrix and the unthreshed pods drop to an inclined, oscillating false bottom (E) consisting of a frame, also covered with 1/4" wire cloth. The false bottom is pivoted at the lower end and is supported at the upper end by elastic bands (F). Oscillation is caused by two pairs of wooden eccentric blocks (G) attached to the rim of the cylinder. The oscillation of the wire cloth covering of the false bottom permits the ground matrix to pass through to a sacking hopper (H), and returns unground pods to a hopper (I) at the feeding point, to be placed again in the thresher. A wooden framework, lined with fly screen, houses the entire assembly and prevents the scattering of seeds and chaff.

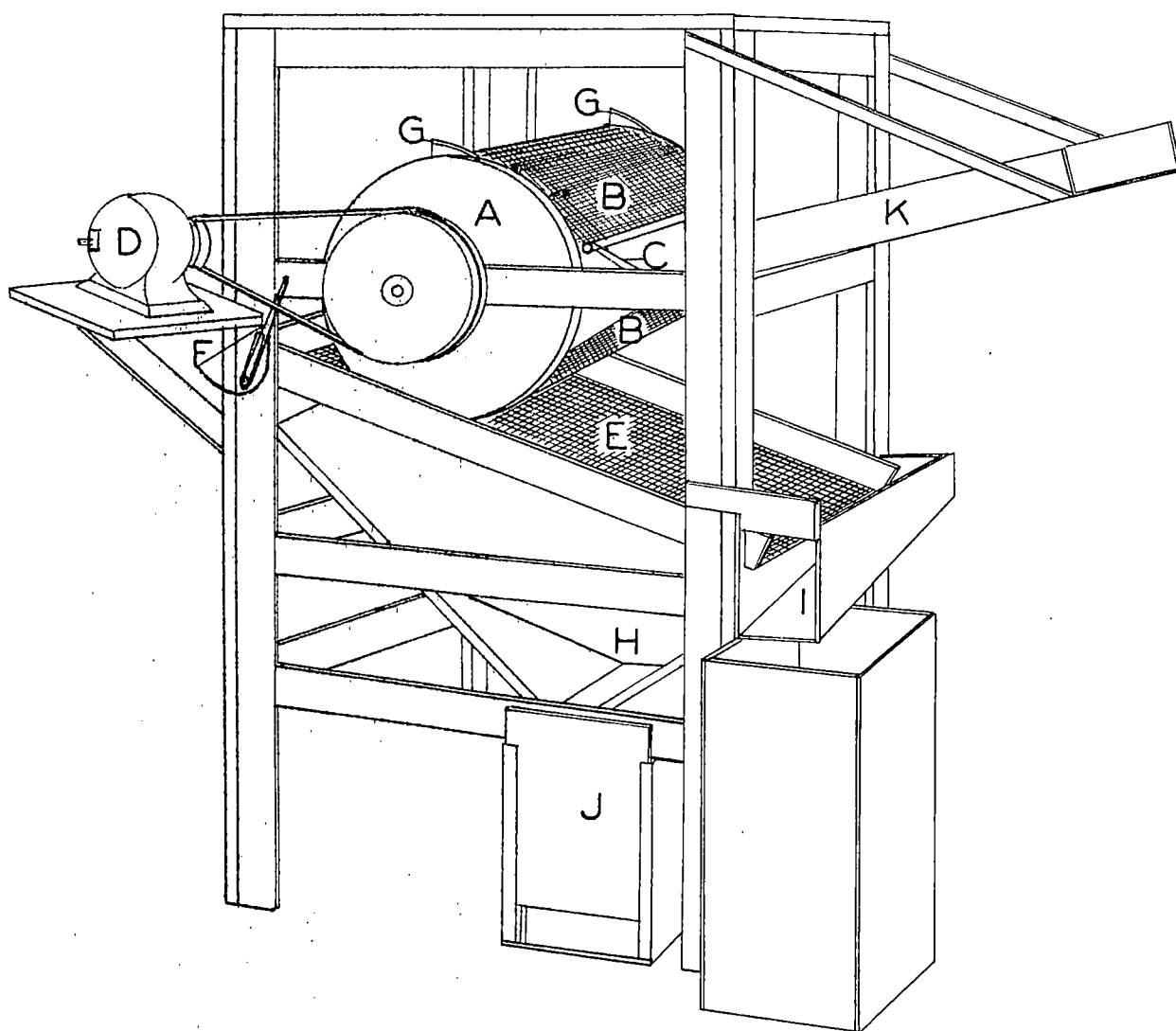
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The amount of treatment necessary is dependent upon the condition of the pods. Thoroughly dried pods can be threshed by returning unground material to the machine only once. Pods which contain considerable moisture and collections containing large amounts of sticks and branches may require that returned material be run through the machine a second or third time. An inspection of the material returned by the false bottom is necessary to ascertain whether all seed has been separated from the pods.

An operator, feeding the machine and sacking the ground matrix, can thresh about six bushels, or fifty pounds, of pods per hour. The cost of threshing by machine is estimated to be about 4 cents per pound of seed, compared to 60 cents per pound of seed threshed by hand. These estimates are based on labor at 40 cents per hour.

In the construction of the thresher, a wide variety of choice in the selection of materials is presented. Angle iron and strap iron may be substituted for lumber in building the outside framework. The axle and drive shaft assembly of the revolving drum consists of iron pipe and fittings, seated in wooden bearings. The replacement of this material with steel shafting, seated in suitable bushing metal, would constitute considerable improvement. The feeding and sacking hoppers, which were made of fiber wallboard, would be more satisfactory if made of sheet metal or closely fitting lumber. Replacement of the elastic bands with spiral steel springs of the correct tension may be desirable. An electric motor of 1/2 H. P. or 1 H. P. would eliminate much of the attention necessary to feed the machine and prevent overloading.

The mixture of ground pods and seed as it comes from the thresher requires treatment in a fanning mill to separate and clean the seed. In some instances a second cleaning may be necessary to remove small stems and twigs.



A HOME-MADE THRESHER FOR BLACK LOCUST SEED PODS

- A REVOLVING DRUM
- BB WIRE CLOTH LOOP
- C ELASTIC BANDS TO MAINTAIN TENSION ON LOOP
- D MOTOR
- E OSCILLATING FALSE BOTTOM
- F ELASTIC BANDS TO SUPPORT FALSE BOTTOM
- GG ECCENTRIC BLOCKS
- H HOPPER TO RECEIVE THRESHED MATRIX
- I HOPPER TO RECEIVE UNTHRESHED MATERIAL
- J HOPPER FOR COLLECTING THRESHED MATRIX
- K FEEDING HOPPER